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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,550	05/13/2004	Chao-Ho Chen	MCCP0006USA	3549
27765	7590	11/01/2005	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			HUNNINGS, TRAVIS R	
			ART UNIT	PAPER NUMBER
			2632	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

JK

<b>Office Action Summary</b>	<b>Application No.</b> 10/709,550	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> Travis R. Hunnings	<b>Art Unit</b> 2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-8 and 16-20 is/are allowed.
- 6) ☒ Claim(s) 1,4,5,9 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 2,3,10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: the phrase 'step 100' in paragraph 36 should be changed to 'step 110' to correspond with the rest of the specification and drawings.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4, 9, 12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Sadok (US Patent Publication 2004/0061777).

Regarding claim 1, Sadok discloses *Detecting Fire Using Cameras* that has the following claimed limitations:

The claimed step of capturing a plurality of images of the predetermined area during an interval for generating a plurality of difference frames is met by the processing that captures frames from the video cameras and compares those frames to a preceding frame or a reference frame (paragraph 81) that form difference frames that are used to detect fire being present (paragraph 105);

The claimed step of detecting a number of pixels that have fire characteristics in each difference frame is met by the brightness of the pixels being used to determine the energy of the frames (paragraph 81) and the energy of the frames being used to detect fire (paragraph 89);

The claimed step of if the result step (b) indicates that a flame in the predetermined area substantially increases during the interval, outputting an early fire alarm is met by the device detecting the increase of frame energy that indicates a fire condition (paragraph 89) and sounding an alarm when a condition is detected (paragraph 306).

Regarding claim 4, the claimed step if the result of step (b) indicates that a ratio of spreading flame in the predetermined area is over a threshold of spreading flame during the interval, then outputting the early fire alarm is met by the fire condition being detected through frame energy of the difference frame which can be calculated through any conventional method such as summing the square of the pixel intensity of the difference frame and taking the square root thereof divided by the number of pixels in the difference frame (paragraph 105).

Regarding claim 9, the claimed image capturing device for capturing images is met by the IR camera (112) as shown in figure 1;

The claimed logic unit for performing the following steps is met by the cargo video controller boards (paragraph 53);

The claimed step of controlling the image capturing device to capture a plurality of images of a predetermined area during an interval for generating a plurality of difference frames is met by the processing that captures frames from the video cameras and compares those frames to a preceding frame or a reference frame (paragraph 81) that form difference frames that are used to detect fire being present (paragraph 105);

The claimed step of detecting a number of pixels that have fire characteristics in each difference frame is met by the brightness of the pixels being used to determine the energy of the frames (paragraph 81) and the energy of the frames being used to detect fire (paragraph 89);

The claimed step of if the result step (b) indicates that a flame in the predetermined area substantially increases during the interval, outputting an early fire alarm is met by the device detecting the increase of frame energy that indicates a fire condition (paragraph 89) and sounding an alarm when a condition is detected (paragraph 306).

Regarding claim 12, the claim is interpreted and rejected as claim 4 stated above.

Regarding claim 14, the claimed video detecting system wherein the logic unit is a logic circuit is met by the processing boards (paragraph 53).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sadok.

Regarding claim 15, (for lacking criticality) as long as the circuitry performing it's desired functionality, it would have been obvious to one of ordinary skill in the art to use either a logic processing board as disclosed by Sadok (paragraph 53) or any form of microprocessor containing programming code to carry out the disclosed processing operations.

6. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sadok in view of Kuno et al. (Kuno; US Patent 5,243,418).

Regarding claim 5, Sadok discloses all of the claimed limitations except for the claimed step of removing noise from the difference frame for generating a difference frame. Kuno discloses *Display Monitoring System For Detecting And Tracking An Intruder In A Monitor Area* that teaches removing noise components that are captured through a video camera in order to eliminate spurious changes due to environmental variations (column 3, lines 34-43). Removing environmental noise from the frames that are used to detect the fire in Sadok would make the system more reliable and reduce false alarms that would be caused by that noise. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Sadok according to the teachings of Kuno to remove noise from the frames.

Regarding claim 13, the claim is interpreted and rejected as claim 5 stated above.

***Allowable Subject Matter***

7. Claims 6-8 and 16-20 are allowed.
8. Claims 2, 3, 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lasenby, *Flame Detection Method And Apparatus*, US Patent 5,510,772;

Barnes et al. *Flame Imaging System*, US Patent 5,726,632;

Chan et al. *Imaging Flame Detection System*, US Patent 5,937,077;

Privalov et al. *Early Fire Detection Method And Apparatus*, US Patent 6,184,792;


Aird et al. *Fire Detection Algorithm*, US Patent 6,956,485.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis R. Hunnings whose telephone number is (571) 272-3118. The examiner can normally be reached on 8:00 am - 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRH

  
**DANIEL WU**  
SUPERVISORY PATENT EXAMINER

10/31/05